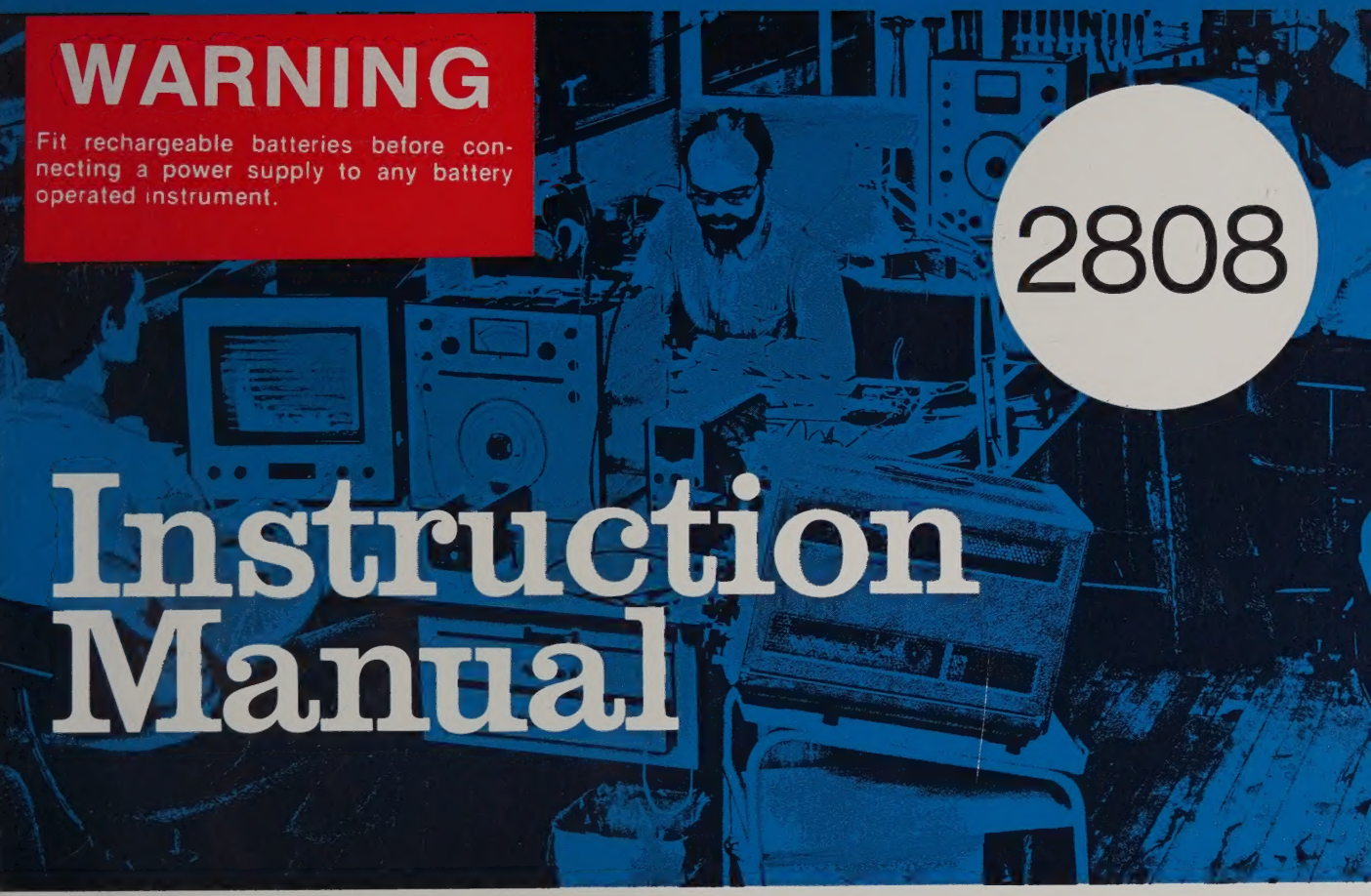
WARNING

Fit rechargeable batteries before connecting a power supply to any battery operated instrument.

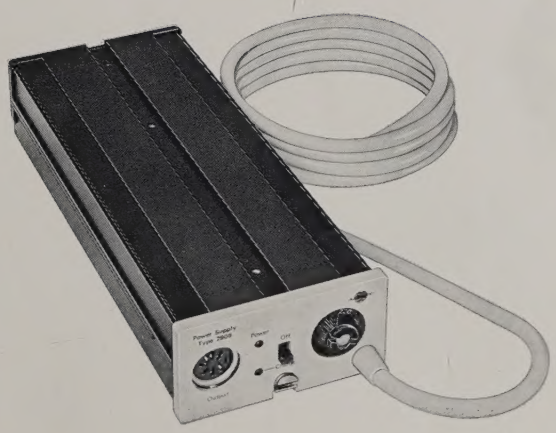


2808

Instruction Manual

Power Supply
Type 2808

A plug-in supply for mains operation of certain portable B & K instruments and for recharging their built-in Power Packs. For recharging spare Power Packs outside the instrument or for recharging 1,2 volt nickel cadmium cells (size R20 in IEC Publication 86-2) for powering other portable instrumentation, the Charging Adaptor AQ 0043 and Battery Box ZG 0073 are available as accessories for use with the 2808.



Brüel & Kjær

033-0026

POWER SUPPLY
TYPE 2808

Revision
February 1976

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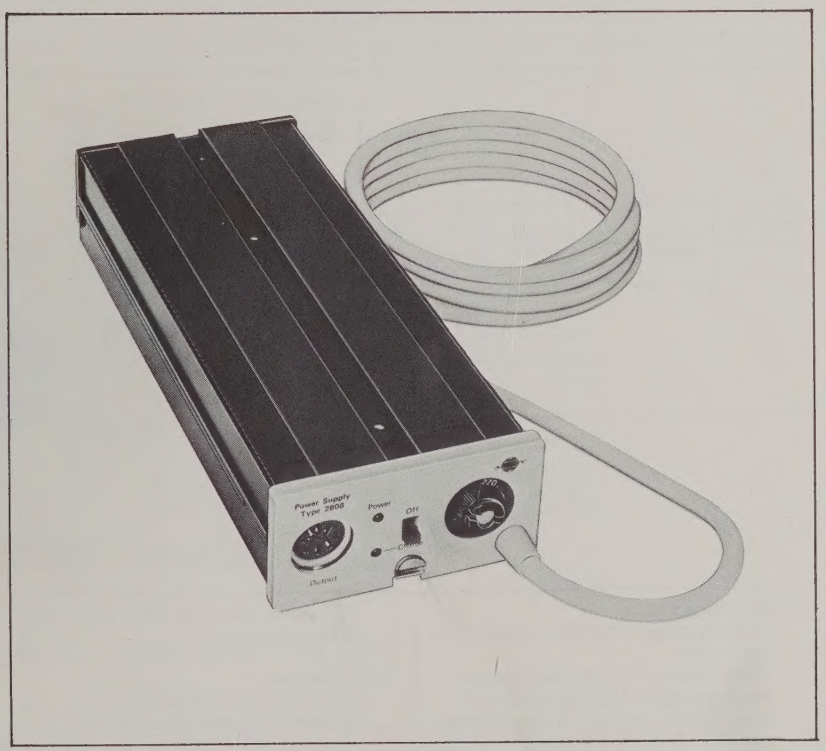
Power Supply

FEATURES:

- Extremely small stray magnetic field
- Plugs directly into battery compartment of instruments Types 2306, 2312, 4426, 7003 and 7004
- Accepts line voltages from 100 V to 240 V AC
- Two separate outputs

USES:

- Mains operation of instruments Types 2306, 2312, 4426, 7003 and 7004 and for recharging their NiCd-cells
- Recharging of NiCd-cells Type IEC R 20 used in various B & K equipment



The Power Supply Type 2808 is intended for mains operation of Tape Recorders Types 7003 and 7004, Level Recorder Type 2306 Noise Level Analyzer Type 4426 and Alphanumeric Printer Type 2312 and for recharging their built-in NiCd-cells (Type IEC R 20), when they are fitted in the Battery Box ZG 0073 (Types 7003, 7004 and 4426) or ZG 0106. (Types 2306 and 2312). Moreover it can be used for recharging NiCd-cells, IEC Type R 20, for various portable B & K instruments.

The 2808 is easy to handle and slides directly into the battery compartment of the instruments. It has a low output impedance and an extremely small stray magnetic field. The supply accepts input voltages from 100 V to 240 V AC with frequencies from 50 to 400 Hz.

As can be seen from the block diagram in Fig.3 the 2808 is furnished with two outputs, one located on the rear plate (Fig.2) and one on the front plate (Fig.1). The rear plate output, which is used only when the supply is fitted into the instrument, supplies a 7,5 V drive voltage. The front plate output supplies both the drive voltage and the 12 V DC necessary for recharging 6 NiCd-cells Type IEC R 20. This output is used when the supply is used externally and connected to the EXT. POWER socket of the instrument via the supplied cable (Types 7003/04 via cable AQ 0041; Types 4426, 2312 and 2306 via cable AQ 0035) to supply drive voltage for the instrument and charge voltage for the built-in NiCd-cells.

When the supply is fitted into the instrument instead of the battery container, the front plate output can supply a charge voltage to the battery container with batteries via Charging Adaptor AQ 0043. A contact DL 3180, supplied with the Charging Adapter, should be fitted to the rear-plate output of the Battery Box to connect the cells in series. If less than six cells have to be

recharged, then Dummy Cells ZR 0017 (available on separate order) should be fitted to make up the correct number of cells (six) in the Battery Box. They ensure proper contact between the Charging Adaptor and the cells, and regulate the charging current to give correct recharging of less than six cells.

Recharging of fully discharged cells will take approximately 14 hours.

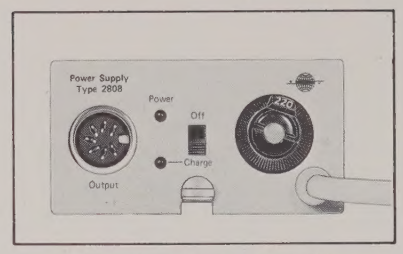


Fig.1. Front plate of Type 2808

The 2808 can supply charging current for one set (six) NiCd-cells only.

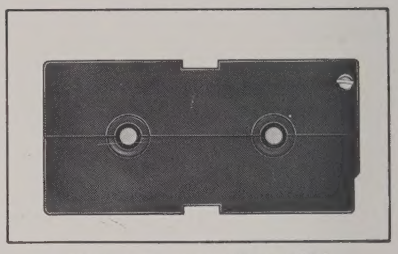


Fig.2. Rear plate of Type 2808

Two lamps on the front plate indicate when line and charge voltages are on. A slide switch allows the charge voltage to be switched off.

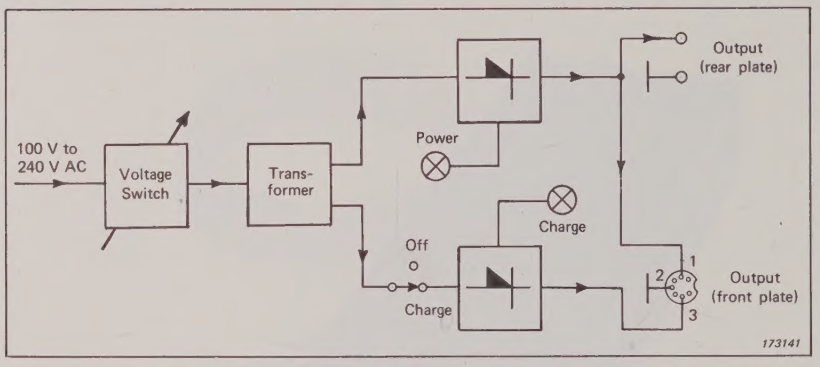


Fig.3. Block diagram of Type 2808

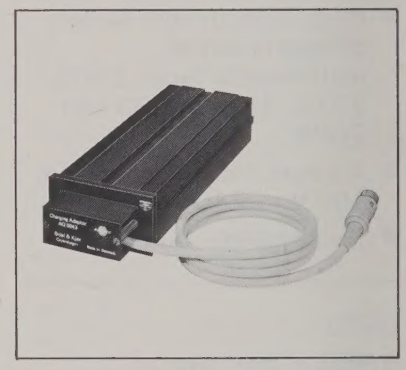


Fig.4. Charging Adaptor AQ 0043 fitted to Battery Box ZG 0073

Specifications 2808

Drive Voltage Supply:
Output Voltage: 7,5 V DC (at 1,25 A output current)
Output Voltage: 11 V DC (open circuit)
Ripple Voltage: < 1,25 V (peak-to-peak)
Max. Output Current: 1,25 A (continuous)
Output Resistance: < 2,5 Ω

Charge Voltage Supply:
Output Voltage: 12 V DC (at 0,4 A output current)
Output Voltage: 17 V DC (open circuit)
Max. Output Current: 0,4 A (continuous)
Recharging Time: 14 hours when cells are fully discharged

Input Voltages:
100, 115, 127, 150, 220 and 240 V AC ± 10% (50 to 400 Hz)

Power Consumption:
Max. 20 VA (continuous)

Dimensions:
Height: 40 mm (1,5 in)
Width: 76 mm (3 in)
Depth: 190 mm (7,5 in)

Weight:
0,85 kg (1,9 lb)

Accessories Included:
7-pin plug JP 0703
Fuses

Accessories Available:
Cable AQ 0041
Charging Adaptor AQ 0043
Battery Box ZG 0073 (for Types 7003 and 7004)
Battery Box ZG 0106 (for Type 2306)
Dummy Cells ZR 0014

2. CONTROLS AND OPERATION

2.1. GENERAL

Operation in this Chapter is confined to the preliminary checks necessary before each use of the 2808 and the use of the 2808 with the Charging Adaptor AQ 0043. For information regarding the use of the 2808 as a plug-in supply for mains operation of portable B & K instruments the Instruction Manual for the relevant instrument should be consulted.

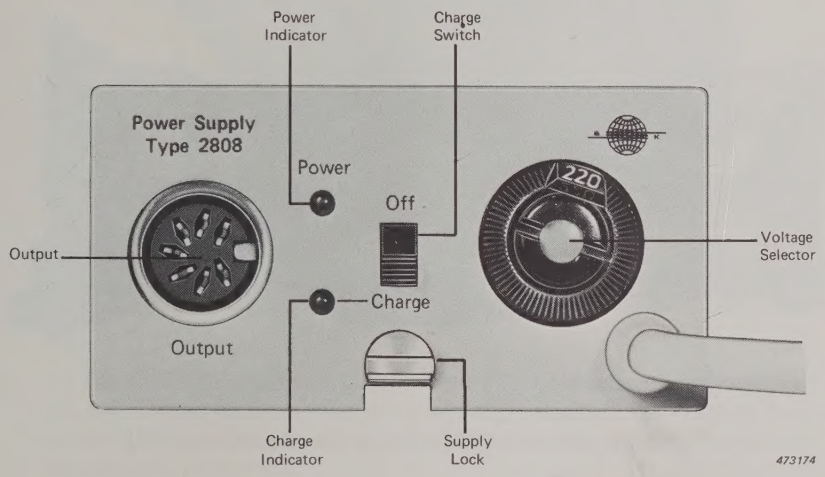


Fig.2.1. Front panel of the 2808

The controls of the 2808 are shown in Fig.2.1. The pin connections to the front panel OUTPUT socket of the Supply are shown in Fig.2.2. The socket accepts a 7 pin DIN plug (B & K stock no. JP 0703)

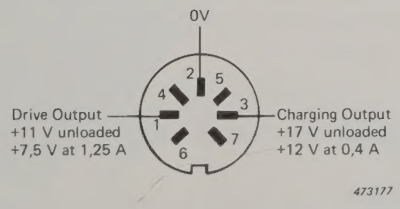


Fig.2.2. OUTPUT socket of the 2808 (external view)

2.2. PRELIMINARY CHECKS

Before each use of the 2808 the following checks should be made.

2.2.1. Mains Voltage Setting

The mains voltage setting is displayed in the window of the VOLTAGE SELECTOR on the front panel of the 2808 (see Fig.2.1.). To adjust the selected voltage, insert a wide blade screwdriver into the slots at the centre of the Selector and use this to turn the Selector until the correct mains voltage setting (± 10%) is displayed in the window.

2.2.2. Mains Fuse Rating

The mains fuse for 100, 115, 127 for 150 volt supplies should be 250 mA, slow blow (B & K stock no. VF 0031). For 220 or 240 volt supplies the fuse should be 125 mA, slow blow (B & K stock no. VF 0030). Both fuses are provided with the 2808. The fuse is shown in Fig.2.3. and is accessible when the black plastic case of the 2808 has been removed after having unscrewed the three screws on the top panel.

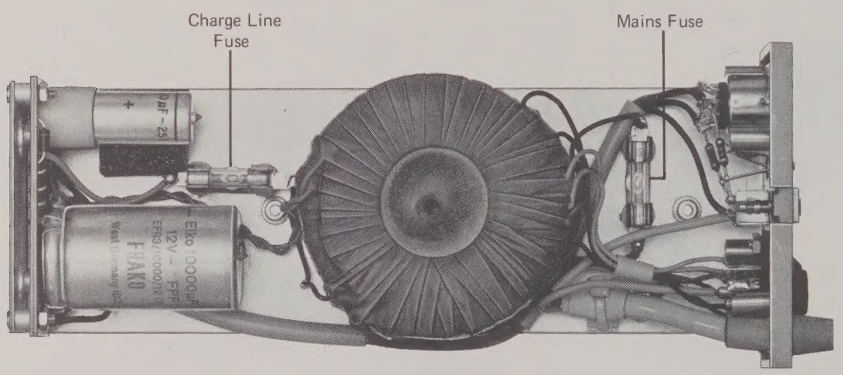


Fig.2.3. Mains and charge line fuses of the 2808

2.2.3. Charge Fuse

If the CHARGE INDICATOR on the front panel of the 2808 fails to light when the "Charge" mode of the CHARGE SWITCH is selected after having connected a mains supply, then a 630 mA slow blow fuse (B & K stock no. VF 0032) in the charge line of the Supply may have been blown. The fuse is shown in Fig.2.3. and is accessible after the three screws on the top panel of the 2808 have been unscrewed for removal of the black plastic case of the Supply.

2.3. USE WITH THE CHARGING ADAPTOR AQ 0043

2.3.1. Recharging Plug-in Power Packs

The Charging Adaptor AQ 0043 is available on separate order. Together with the 2808 it may be used to recharge the plug-in Power Packs of certain portable B & K instruments. In this connection it is used in place of the charging circuit built into some of the instruments and thus frees them for field use while the 2808 is in use for recharging Power Packs in the laboratory. Spare Power Packs are available on separate order and consist of a Battery Box ZG 0073 containing six nickel cadmium cells QB 0008.

To recharge a plug-in Power Pack proceed as follows:

1. Release the lid of the Battery Box containing the cells to be recharged, using a screwdriver to turn the screw head fastenings on the front of the Box. Do not remove the cells.

2. Insert the forked ends of the Contact DL 3180 into the pole contact holes at the rear of the Box (see Fig.2.4). The Contact is provided with the Charging Adaptor AQ 0043 and connects the cells in the two compartments of the Box in series.

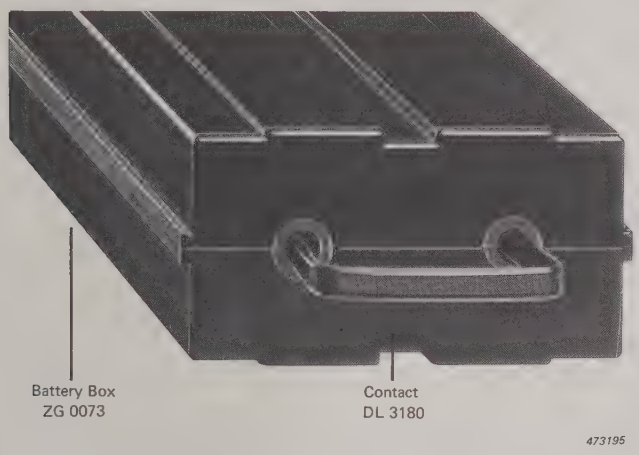


Fig.2.4. The Battery Box ZG 0073 fitted with the Contact DL 3180

3. Fit the Charging Adaptor to the open end of the Box as shown in Fig.2.5. To ensure proper contact between the cells and the Adaptor, the Adaptor has spring loaded pole contacts. It is locked into place using the screw head fastenings normally used to lock the lid of the Box.

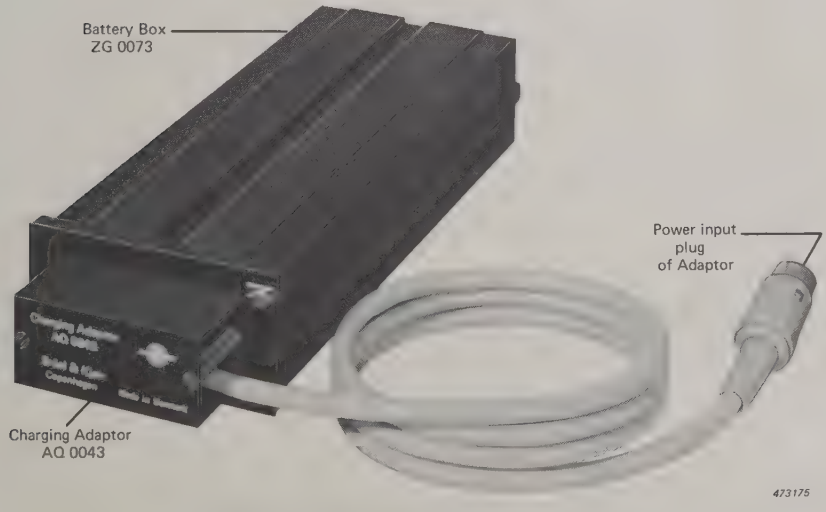


Fig.2.5. The Charging Adaptor AQ 0043 fitted to the Battery Box ZG 0073

4. With the 2808 disconnected from the mains supply check its mains voltage setting and mains fuse rating as in section 2.2.

5. Connect the 7 pin DIN plug of the Charging Adaptor's power input line to the OUTPUT Socket on the front panel of the 2808 and then connect the 2808 to the mains supply.

6. Set the CHARGE SWITCH on the 2808 to "Charge" to start recharging the cells in the Box. For recharging totally exhausted cells the time required is approximately 14 hours. There is no danger from leaving the cells on charge for a longer time.

7. After having recharged the cells disconnect the 2808 from the mains supply and remove the Charging Adaptor and the Contact DL 3180 from the Box.

8. Finally replace the lid of the Box. Charged cells can be stored in the Box until required for use.

WARNING! BEFORE REPLACING THE LID OF THE BATTERY BOX ENSURE THAT THE CONTACT DL 3180 HAS BEEN REMOVED AS OTHERWISE THE CELLS IN THE BOX WILL BE SHORT CIRCUITED.

2.3.2. Recharging Nickel Cadmium Cells QB 0008

Aside from B & K instruments which use a plug-in Power Pack, the nickel cadmium cells QB 0008 may be used to power instruments that normally accept conventional dry cells (Type R20 in IEC Publication 86-2). The cells are SAFT voltablock Type VR3,5 which have a voltage rating of 1,2 volts and a capacity of 3,5 amp hours. Their chief advantage compared with conventional dry cells is economy. They have a high charge capacity which gives them a longer operating life than other cells and SAFT specify that with normal use they have a minimum of 300 charge cycles.

For recharging the cells QB 0008 the same procedure as given in section 2.3.1 is used. However, first the cells must be loaded into the Battery Box ZG 0073 in order that the Charging Adaptor AQ 0043 may be fitted. The Battery Box accepts a total of six cells which should be fitted with their positive poles (stud on cell casing) facing the directions indicated in each of the two compartments of the Box. Care should be taken to ensure that the correct polarity is observed as otherwise there is a danger of the cells exploding when being recharged.

It is also important to ensure that the cells fitted have approximately the same charge state. If not, the current of charged cells could cause reversal of the polarity of near exhausted cells. For this reason a particular set of cells should always be charged and discharged as a set. Never mix sets of cells that have been used to power different instruments.

If less then six cells have to be recharged then Dummy Cells ZR 0017 should be fitted to make up the correct number of cells in the Battery Box. The Dummy Cells are available on separate order, and besides ensuring proper contact between the Charging Adaptor and the cells to be recharged, they also set the charging current from the Adaptor for correctly recharging less than six cells.

2.4. BATTERY OPERATION OF THE CHARGING ADAPTOR AQ 0043

Where portable measuring instrumentation is to be used extensively for field applications, the Charging Adaptor may be powered using a 12 volt car battery thus enabling spare

Power Packs or cells QB 0008 to be kept on charge whilst travelling between measurement sites. For this purpose a 7 pin DIN socket (B & K stock no. JJ 0709) may be wired to the battery as shown in Fig.2.6 for connection of the Adaptor's power input plug. Connection of the Adaptor without the Battery Box fitted should be avoided, as otherwise the pole contacts of the Adaptor could short against metal panelling in the car. The maximum current consumption from the battery whilst recharging is 0,4 amps. The recharge time for totally discharged Power Packs or cells is approximately 14 hours.

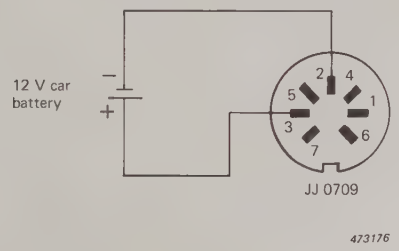


Fig.2.6. Connection of a 7 pin DIN socket (rear view) to a 12 volt car battery for powering the Charging Adaptor AQ 0043

3. SERVICE INSTRUCTION

(Valid from serial no. 399020)

3.1. CIRCUIT DIAGRAM

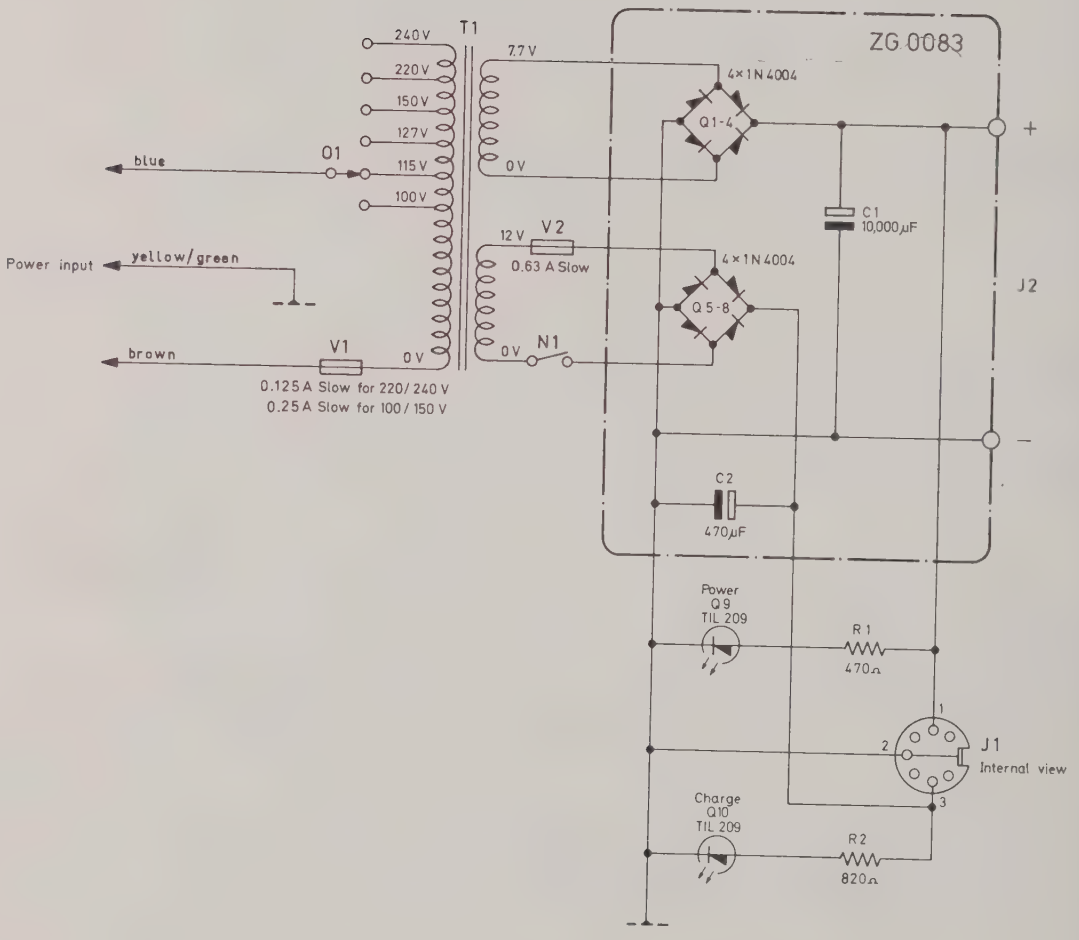
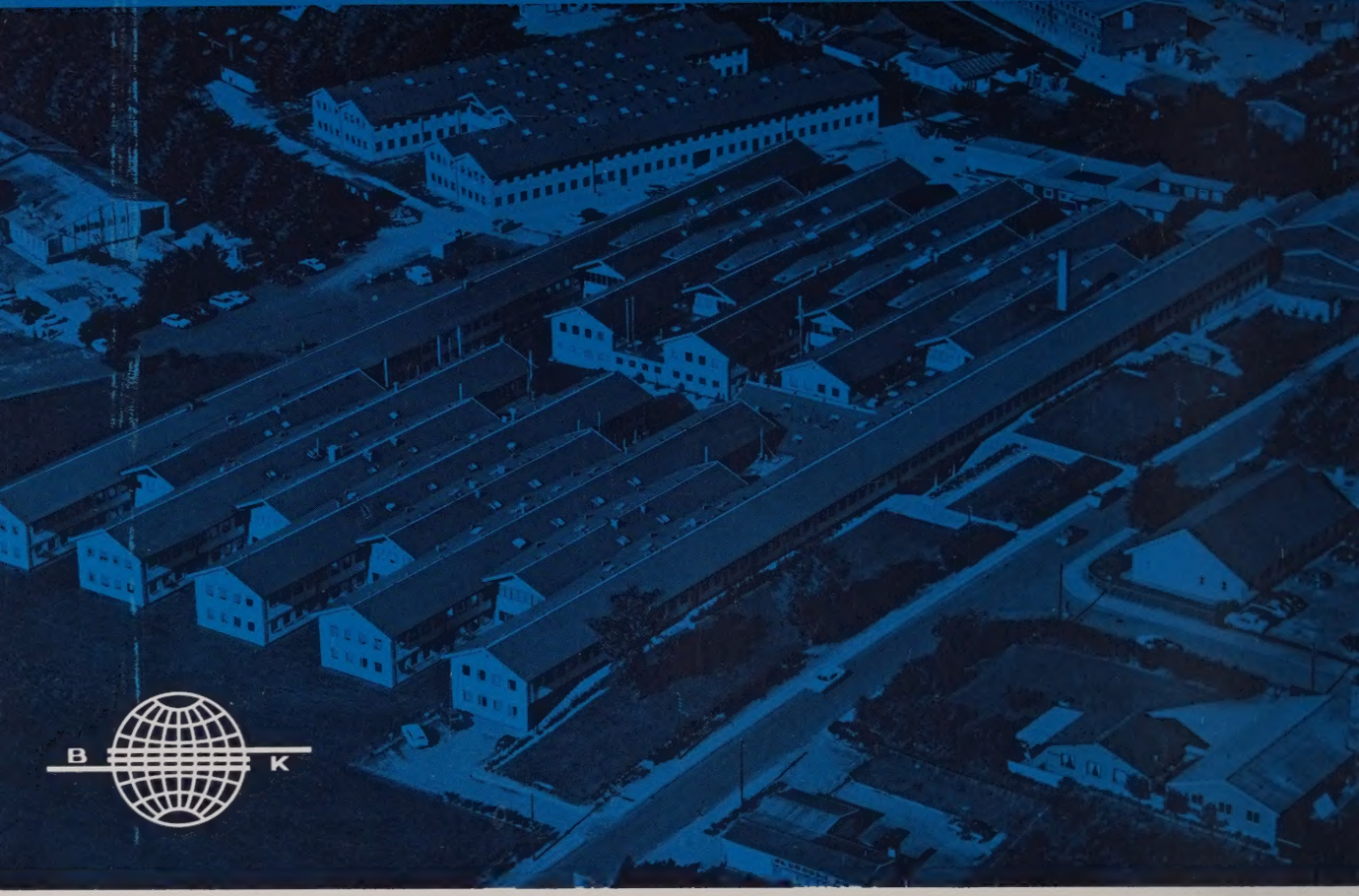


Fig. 3.1. Circuit diagram of 2808

3.2. PARTS LIST

C 1	Electrolytic	10000 µF/ 12 V	CE 0333
C 2	—	470 µF/ 25 V	CE 0457
J 1	DIN socket	7-pin	JJ 0709
N 1	Charge Switch		NN 0039

O 1	Mains Voltage Selector				OA 0043
Q 1-8	Silicon	400 V/ 1 A		1 N 4004	QV 0237
Q 9,10	Light Emitting Diode			TIL 209	QV 4000
R 1	Carbon	1/4 W	5%	470 Ω	RB 2470
R 2	-	-	-	820 Ω	RB 2820
T 1	Mains Transformer				TN 0078
V 1	Fuse 0,125 A slow				VF 0030
	Fuse 0,25 A slow				VF 0031
V 2	Fuse 0,63 A slow				VF 0032
	Printed Circuit Board				XC 1045
	Printed Circuit Board with components				ZG 0083
	Plastic Casette				UC 5166
	Front Plate				FA 0459
	Retaining Nuts for above				YM 0453
	Locking Screw				DA 1013
	Circlip for above				YR 3003



BRÜEL & KJÆR instruments cover the whole field of sound and vibration measurements. The main groups are:

ACOUSTICAL MEASUREMENTS
Condenser Microphones
Piezoelectric Microphones
Microphone Preamplifiers
Hydrophones
Sound Level Meters
Precision Sound Level Meters
Impulse Sound Level Meters
Noise Dose Meters
Noise Level Analyzers
Standing Wave Apparatus
Calibration Equipment
Reverberation Processors
Sound Sources

ACOUSTICAL RESPONSE TESTING
Sine Generators
Random Noise Generators
Sine-Random Generators
Artificial Voices
Artificial Ears
Artificial Mastoids
Hearing Aid Test Boxes
Audiometer Calibrators
Telephone Measuring Equipment
Audio Reproduction Test Equipment
Tapping Machines
Turntables

VIBRATION MEASUREMENTS
Accelerometers
Force Transducers
Impedance Heads
Accelerometer Preamplifiers
Vibration Meters
Accelerometer Calibrators
Magnetic Transducers
Capacitive Transducers
Complex Modulus Apparatus
Bump Recorders

VIBRATION TESTING
Exciter Controls — Sine
Exciter Controls — Sine — Random
Exciter Equalizers, Random or Shock
Exciters
Power Amplifiers
Programmer Units
Stroboscopes

STRAIN MEASUREMENTS
Strain Gauge Apparatus
Multipoint Selectors

MEASUREMENT AND ANALYSIS
Voltmeters
Phase Meters
Deviation Bridges
Measuring Amplifiers
Band-Pass Filter Sets
Frequency Analyzers
Real Time Analyzers
Heterodyne Filters and Analyzers
Distortion Measuring Equipment
Psophometers
Statistical Distribution Analyzers
Tracking Filters

RECORDING
Level Recorders
Frequency Response Tracers
Tape Recorders
Alphanumeric Printers
Digital Event Recorders

DIGITAL EQUIPMENT
Computers
Tape Punchers
Tape Readers

Brüel & Kjær

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